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FOSTERING CREATIVITY AND INNOVATION WITHIN SCIENCE AND TECHNOLOGY TEAMS

Abstract

As we move into the next generation of Space exploration and exploitation, we are faced with a new swathe of often conflicting challenges such as: increasing demand for more economic launch vehicles and satellites with higher payload capacity, lighter weight and increased reliability; and advanced Environmental and Life support systems for long term interplanetary missions. The rate of technology advancement also requires companies to constantly develop "game changing" solutions to stay ahead of the competition and remain viable. In this environment, the need for individuals and teams to tap into creative processes to produce innovative solutions and long-term visions is essential. However, there are so many internal fears and external barriers that often hinder the creative process, particularly when in a team environment or in larger organisations with entrenched culture and business practices.

Consequently, a study was undertaken at the Defence Science and Technology Group (DST), to better understand how creativity applies to science and engineering teams and how this can be fostered in team business environments. The primary focus was to understand some of the barriers to creativity; along with what fosters creativity in individuals, teams and organisations. This was undertaken using DST as an analogy for similar large research and development organisations. The investigation utilised a number of methods including: interviews with staff, creativity audit questionnaires, investigations of literature and a number of organisational case studies.

It was found that researchers see creativity as an intrinsic part of their work; however, there is sometimes a resistance to suggest or investigate the "crazy" visions and ideas. This resistance to creativity becomes more apparent where there is pressure to meet the expectations of senior management, or higher levels of administration and risk avoidance. Additionally, there are also cultural and personal factors that come into play such as the fear of being judged or ridiculed for suggesting a "stupid" or "impossible" idea, or the fear of damaging your own or your organisation's reputation if you fail. The primary requirement for creativity in teams was to have strong interpersonal relationships and psychological safety; and diversity in personality, gender, culture and scientific expertise.

This paper discusses the findings of the study including the top barriers to creativity in teams, and provides a series of recommendations on how organisations can better position themselves to support and foster creativity. Thus enabling the advancement of technological solutions and creation of visions and goals for future development.